

Outdoor Utility Transformers

To: Customers & Code Enforcement Staff

From: Joe Weathers, Electrical Code Administrator

Re: Outdoor Utility Transformers Policy

Date: September 1, 2009

Oil-insulated transformers that are placed too close to other equipment or buildings can pose a significant public safety hazard if they explode.

Although Mecklenburg County Code Enforcement does not have authority to regulate the location of utility-owned oil-insulated transformers, the department was instructed by the North Carolina Department of Insurance (DOI) that there must "be protection for the buildings or structures and equipment, both inside and out, from such installations," as stated in Article 450.27 of the NEC.

The standard to be used to enforce the DOI mandate to provide protection from the resulting hazards of utility-owned oil-insulated transformers is as follows:

"While the section (NEC 450.27) does not prescribe a specific distance, it requires the code official to identify what a safe distance would be based on the circumstances. Article 450.27 is structured to allow the code official to facilitate a safe distance between combustible construction and a transformer. Since there are many types of transformers, voltages, etc., the specific distance is left to the approval of the inspector. ...Have the inspector draw from their experience in this area."

At the industry's request, Mecklenburg County Code Enforcement, Duke Energy's Engineering Standards and Applications Team, the County Manager's Office and local engineers have collaborated to provide written guidance that can be used as an alternate method to DOI's mandate. This effort resulted in developing a document of protection guidelines called the Duke Energy Standard. Code Enforcement intends to accept this standard as an alternate method for dealing with utility-owned oil-insulated transformers in compliance with Article 450.27 of the NEC.

The NEC does not offer precise clearance guidelines for this issue. Therefore, Code Enforcement has also allowed other alternate methods such as Factory Mutual Global recommendations, IEEE 979, and other nationally recognized standards to be used on a case-by-case basis while working with Duke Energy and others to determine the best method of protection.

Other important information:

[CAECA Report](#)

[Duke Energy Standard](#)

[NCDOI Communication](#)

[Factory Mutual \(FM\) Global](#)

[January 2009 Information Session](#)

[BCC Transformer Ruling](#)

[Frequently Asked Questions](#)

Examples of imminent danger:

- [Image 1](#)
- [Image 2](#)
- [Image 3](#)
- [Image 4](#)

Possible solutions may vary.

Examples of various sized transformers in fault conditions:

- [Example 2](#)
- [Example 3](#)
- [Example 4](#)
- [Example 5](#)

Point of contact for additional questions or concerns:

CONTACT:

- For general **permit information**, please call 704-336-3830
- For general **electrical code questions**, please call CTAC 704-432-4668
- For Code **Interpretations**, please call [Joe Weathers](#), Electrical Code Administrator, 704-336-5379